Check List the journal of biodiversity data

ANNOTATED LIST OF SPECIES

Check List 17 (5): 1323–1343
https://doi.org/10.15560/17.5.1323

PENSOFT

Semiaquatic bugs (Hemiptera, Heteroptera, Gerromorpha) from Rio Grande do Sul, southern Brazil

Juliana Mourão dos Santos Rodrigues[1*], Oséias Martins Magalhães[1], Evaldo Alves Joaquim Júnior[1], José Ricardo Inacio Ribeiro[2], Felipe Ferraz Figueiredo Moreira[1]

1 Laboratório de Biodiversidade Entomológica, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil • JMSR: julianamourao@yahoo.com.br https://orcid.org/0000-0003-2872-138X • OMM: biooseiasmartins@gmail.com https://orcid.org/0000-0003-4988-7119 • EAJJ: joakimjunior777@gmail.com • FFFM: ppmeiameiameia@gmail.com https://orcid.org/0000-0002-6692-0323

2 Laboratório de Estudos da Biodiversidade do Pampa, Campus São Gabriel, Universidade Federal do Pampa, São Gabriel, Brazil; jozecaricardo@gmail.com https://orcid.org/0000-0001-5035-2766

* Corresponding author

Abstract

Rio Grande do Sul (RS) is the southernmost state in Brazil and includes areas within the Pampa and Atlantic Forest biomes. The semiaquatic bugs (Hemiptera, Heteroptera, Gerromorpha) from RS are poorly known, with only 14 previously recorded species. We carried out two expeditions in this state, in 2002 and 2019, across 19 municipalities. Here, we provide new records for 19 species, of which 13 are recorded for the first time from the state, five have their distributions expanded, and one is recorded again from a same locality previously reported in the literature. Furthermore, 13 species were collected for the first time in the Pampa biome and one in the Atlantic Forest.

Keywords

Aquatic insects, Atlantic Forest, geographic distribution, Neotropical region, Pampa

Academic editor: Julianna Freires Barbosa | Received 29 June 2021 | Accepted 12 August 2021 | Published 27 September 2021

Citation: Rodrigues JMS, Magalhães OM, Joaquim Júnior EA, Ribeiro JRI, Moreira FFF (2021) Semiaquatic bugs (Hemiptera, Heteroptera, Gerromorpha) from Rio Grande do Sul, southern Brazil. Check List 17 (5): 1323–1343. https://doi.org/10.15560/17.5.1323

Introduction

Gerromorpha (Hemiptera, Heteroptera), or semiaquatic bugs, comprise more than 2100 extant species divided among approximately 160 genera and eight families (Polhemus and Polhemus 2008; Moreira 2015). Most representatives of this suborder have the ability to walk on the surface of the water (Andersen 1982; Schuh and Slater 1995). They occur on all continents, except for Antarctica (Polhemus and Polhemus 2008), and are characterized by having the antennae longer than the head, inserted in front of eyes and plainly visible from above, the metacoxae small, conical or cylindrical, freely rotatory in the acetabula, and the forewing membrane without cells or with dissimilar cells (Moreira et al. 2018). So far, 238 species of Gerromorpha have been recorded from Brazil belonging to the families Gerridae (57 species), Hebridae (9), Hydrometridae (14), Mesoveliidae (7), and Veliidae (151) (Moreira 2021a, 2021b, 2021c, 2021d, 2021e). Historically, the northern and southeastern regions of the country were the best explored (Moreira et al. 2011a), but this has been changing in recent years due

©The authors. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

to surveys performed by local researchers, especially in the northeastern region (e.g., Franco et al. 2020, 2021; Rodrigues et al. 2021).

The semiaquatic bugs from Rio Grande do Sul state, southern Brazil, are poorly known, with only 14 species recorded so far (localities, biomes and references in parentheses): *Halobatopsis platensis* (Berg, 1879) (unspecified; Nieser 1970); *Ha. spiniventris* Drake & Harris, 1936 (Santiago; Atlantic Forest; Moreira and Campos 2012); *Hydrometra argentina* Berg, 1879 (Ibarama and Pinhal Grande; Atlantic Forest; Neri et al. 2005); *Limnogonus ignotus* Drake & Harris, 1934 (Pinhal Grande; Atlantic Forest; Moreira et al. 2011b); *Mesovelia mulsanti* White, 1879 (Porto Alegre or Eldorado do Sul; Pampa; Neering 1954); *Oiovelia brasiliensis* Moreira, Nessimian & Rúdio, 2010 (Santiago; Atlantic Forest; Moreira and Campos 2012); *Rhagovelia janeira* Drake, 1953 (unspecified; Nieser and Melo 1997; Nieser and Polhemus 1999); *Rha. lucida* Gould, 1931 (Caxias do Sul, Chapada, and Lagoa dos Quadros; Atlantic Forest; Bacon 1956; Polhemus 1997); *Rha. novana* Drake, 1953 (Quaraí; Pampa; Museo Civico di Rovereto 2010); *Rha. plaumanni* Polhemus, 1997 (Arroio Grande; Pampa; Polhemus 1997); *Rha. thaumana* Drake, 1958 (Santiago; Atlantic Forest; Moreira and Campos 2012); *Rha. trepida* Bacon, 1948 (Carazinho; Atlantic Forest; Polhemus 1997); *Rheumatobates bonariensis* (Berg, 1898) (Ibarama; Atlantic Forest; Neri et al. 2005); and *Steinovelia virgata* (White, 1879) (Bossoroca; Pampa; Moreira et al. 2020). We present here new records for 19 species based on material collected from understudied areas in Rio Grande do Sul, both in the Atlantic Forest and Pampa biomes.

Study Area

Southern Brazil includes three states, with a total area of 576,783.781 km^2, occupying 6.77% of the country area (IBGE 2018). Rio Grande do Sul (RS) is the southernmost state in the region, bordering Argentina to the northwest and Uruguay to the southwest. The state has an area of 281,707 km^2 divided into two biomes: Atlantic Forest (87,871 km^2) and Pampa (193,836 km^2) (IBGE 2019; Fig. 1).

The Atlantic Forest in RS consists mainly of Dense Ombrophilous Forest associated with the warm and humid coastal climate, with no systematic dry period, and thermal amplitudes mitigated by the maritime influence. Such conditions are reflected in the high structural and floristic richness of the vegetation (IBGE 2019). The Pampa biome comprises 2.3% of the total area of Brazil and is found only in the southern half of RS. It constitutes the Brazilian portion of the South American Pampas, which also extend through the territories of Uruguay and Argentina, and is classified as a steppe in the international phytogeographic system (IBGE 2019). It is characterized by the rainy climate, without a systematic dry period, but marked by the frequent polar fronts and low temperatures during the winter, which produce the seasonality typical of a dry, cold climate. The Pampa has phytophysiognomies that include forests and grasslands, but the most common is the steppe (86.8%), an open formation of trees and low shrubs, with a predominance of grasses (IBGE 2019).

Rio Grande do Sul includes two of the 12 major

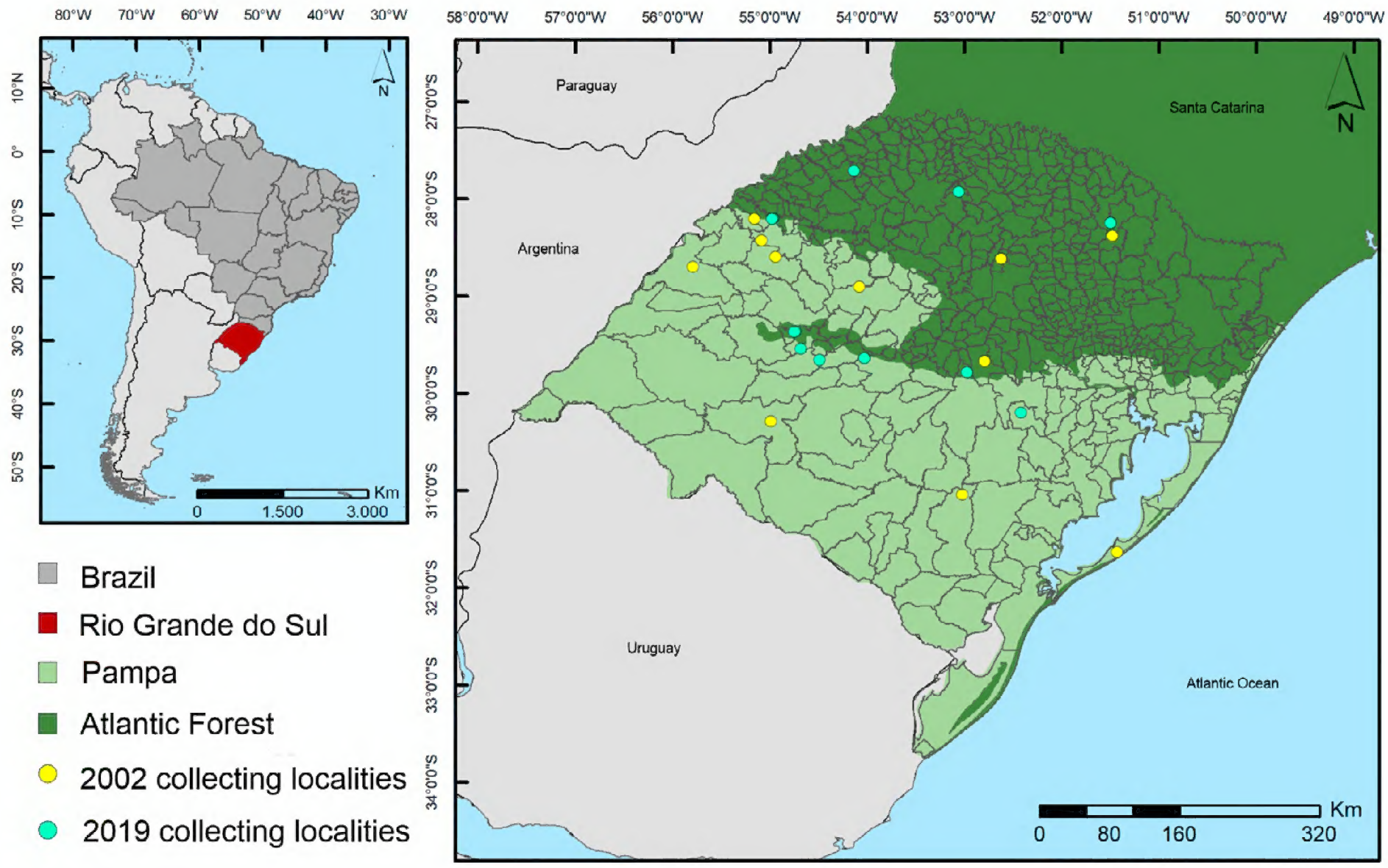

Figure 1. Geographical distribution of the collecting localities of Gerromorpha in Rio Grande do Sul, Brazil.

hydrographic regions of Brazil: Uruguai and Atlântico Sul (MMA 2003). Within the state, there are three hydrographic regions and 25 watersheds: Apuê-Inhandava, Butuí-Icamaquã, Ibicuí, Ijuí, Negro, Passo Fundo, Piratim, Quaraí, Santa Maria, Turvo, and Várzea (Rio Uruguai basin, about 57% of the total area of the state); Alto Jacuí, Baixo Jacuí, Caí, Gravataí, Lago, Pardo, Sinos, Taquari-Antas, Yacacaí, (Guaíba basin, 30%); and Camaquã, Mampituba, Mirim São Gonçalo, Litoral Médio, and Tramandaí (coastal watersheds, 13% of the state) (RS 2018; SPGG 2021).

Methods

Material from Rio Grande do Sul state was collected during two expeditions, the first in 2002 and the second in 2019 (Fig. 1). We sampled in various types of water bodies (puddles, lakes, streams and rivers; Figs. 2–7) across 19 municipalities in the state: Barra Funda, Boa Vista do Buricá, Bossoroca, Candelária, Jaguari, Lagoa Vermelha, Novos Cabrais, Pantano Grande, Piratini, Rosário do Sul, Santa Maria, Santiago, São Borja, São José do Norte, São Luiz Gonzaga, São Nicolau, São Vicente do Sul, Tio Hugo, and Tupanciretã.

Figure 2. Photographs of collecting localities in Rio Grande do Sul, Brazil. **A, B.** Pantano Grande, BR-290, weir, 30°11′54.5″S, 052°24′48.1″W, 25.XI.2019. **C–F.** Novo Cabrais, Parque Witeck, lake, 29°47′09.6″S, 052°58′07.5″W, 25.XI.2019.

Figure 3. Photographs of collecting localities in Rio Grande do Sul, Brazil. **A, B.** Santa Maria, Canabarro, weir, 29°38′16.2″S, 054°01′15.8″W, 26.XI.2019. **C.** Santa Maria, Rio Ibicuí-Mirim, river, 29°38′13.1″S, 054°01′48.4″W, 26.XI.2019. **D.** São Vicente do Sul, Rio Toropi, river, 29°39′19.4″S, 054°29′10.0″W, 26.XI.2019.

We identified specimens based mainly on Moreira et al. (2018) and the literature specific for each genus and species group: McKinstry (1937), Hungerford (1954), Bachmann (1966), Spangler (1990), Nieser and Melo (1997, 1999), Nieser and Polhemus (1999), Moreira (2012), Moreira and Barbosa (2013), Rodrigues et al. (2014), Floriano and Rodrigues (2016), Magalhães et al. (2016), Cordeiro (2017), and Floriano et al. (2017). Whenever necessary, we compared the specimens with type or reference material. We deposited the material in the Coleção Entomológica do Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil (CEIOC).

We obtained the geographical coordinates of the collecting localities with a GPS receiver. We took photographs of the specimens with a Leica M205 C stereomicroscope coupled with a digital camera, using the Leica LAS imaging system. We produced maps using ArcGIS 10.5 (ESRI, Redlands, USA). The distribution presented for each species is according to Moreira (2021a, 2021c, 2021d, 2021e), and abbreviations of Brazilian states are according to the official standard (IBGE 2021). The list of species is organized alphabetically by family, subfamily, tribe, genus, and specific epithet. First records from Rio Grande do Sul are marked in bold font and with an asterisk (*).

Results

Family Gerridae
Subfamily Charmatometrinae
Genus *Brachymetra* Mayr, 1865

***Brachymetra albinervus* (Amyot & Serville, 1843)**
Figure 8

New records. BRAZIL – **Rio Grande do Sul** • Arroio Jacaré; 29°32′34.0″S, 054°40′43.1″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 1 apterous ♂, 1 apterous ♀, CEIOC 76825 • Santiago, Rio Jaguarizinho; 29°21′44.3″S, 054°44′04.1″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 1 apterous ♂, CEIOC 76826.

Figure 4. Photographs of collecting localities in Rio Grande do Sul, Brazil. **A, B.** Santiago, Rio Jaguarizinho, river, 29°21′44.3″S, 054°44′04.1″W, 26.XI.2019. **C, D.** Santiago, flooded area, 29°22′19.3″S, 054°44′41.3″W, 26.XI.2019.

Identification. Our specimens of *B. albinervus* were identified based on the antennomere I shorter than II and III together; the eye not surpassing the anterolateral angle of the pronotum; the pronotum with the apex not reaching the mesoacetabulum in the apterous form; the fore femur robust and slightly arched, with sparse conical black setae ventrally; the dorsum of the acetabula with silvery setae; and the male paramere wide, with obtuse apex (Cordeiro 2017).

General distribution. Bolivia, Brazil, Colombia, Costa Rica, Dominica, Ecuador, French Guiana, Grenada, Guatemala, Honduras, Martinique, Panama, Paraguay, Peru, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Venezuela.

Distribution in Brazil. AL, AM, BA, CE, MA, MG, MT, PA, RJ, **RS***, SE, SP.

Subfamily Gerrinae
Tribe Gerrini
Genus *Limnogonus* Stål, 1868

***Limnogonus profugus* Drake & Harris, 1930**
Figure 9A–E

New records. BRAZIL – **Rio Grande do Sul** • Bossoroca; 28°35′57″S, 54°56′22″W; 2002; J.R.I. Ribeiro leg.; 1 macropterous ♀, CEIOC 56032 • Candelária; 29°40′08″S, 052°47′20″W; 2002; J.R.I. Ribeiro leg.; 1 macropterous ♀, CEIOC 56031 • Novos Cabrais, Parque Witeck; 29°47′09.6″S, 052°58′07.5″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 1 macropterous ♂, CEIOC 76829 • Palmeiras das Missões; 27°49′36″S, 053°24′19″W; 2002; J.R.I. Ribeiro leg.; 1 macropterous ♂, CEIOC 56030 • Piratini; 31°02′40.4″S, 053°01′10.8″W; 2002; J.R.I. Ribeiro leg.; 1 macropterous ♀, CEIOC 56027 • Rosário do Sul; 30°17′34.5″S, 054°59′13.8″W; 2002; J.R.I. Ribeiro leg.; 1 apterous ♀, CEIOC 56033 • São Luiz Gonzaga; 28°25′37.7″S, 055°04′53.4″W; 2002; J.R.I. Ribeiro leg.; 1 apterous ♀, CEIOC 56029 • São Luiz Gonzaga, Fazenda do Cerro; 28°12′32.0″S, 054°58′40.4″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir and stream; 2 macropterous ♀, CEIOC 76827

Figure 5. Photographs of collecting localities in Rio Grande do Sul, Brazil. São Luiz Gonzaga, Fazenda do Cerro, 27.XI.2019. **A, B.** Weir and stream, 28°12′32.0″S, 054°58′40.4″W. **C, D.** Stream, 28°12′29.6″S, 054°58′35.7″W. **E, F.** Stream, 28°12′09.3″S, 054°58′21.1″W.

Figure 6. Photographs of collecting localities in Rio Grande do Sul, Brazil. **A–D.** São Luiz Gonzaga, Fazenda do Cerro, 27.XI.2019. **A, B.** Puddle, 28°12′07.9″S, 054°58′07.1″W. **C, D.** Weir, 28°12′12.1″S, 054°57′41.7″W. **E, F.** Boa Vista do Buricá, Rio Buricá, river, 27°42′52.4″S, 054°08′06.7″W, 28.XI.2019.

Figure 7. Photographs of collecting localities in Rio Grande do Sul, Brazil. **A.** Barra Funda, lake, 27°55′41.4″S, 053°03′08.0″W, 28.XI.2019. **B.** Lagoa Vermelha, lake, 28°15′00.8″S, 051°29′37.3″W, 28.XI.2019.

Figure 8. Collected specimens. **A, B.** *Brachymetra albinervus*, apterous male from Jaguari (29°32′34.0″S, 054°40′43.1″W), habitus. **A.** Dorsal view. **B.** Ventral view. Scale bars: 1 mm.

• São Luiz Gonzaga, Fazenda do Cerro; 28°12′29.6″S, 054°58′35.7″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; stream; 1 macropterous ♀, CEIOC 76828 • São Borja, Nhu-porã; 28°42′07.4″S, 055°47′12.5″W; 2002; J.R.I. Ribeiro leg.; 1 macropterous ♀, CEIOC 56034 • São Nicolau; 28°12′36.5″S, 055°09′12.7″W; 2002; J.R.I. Ribeiro leg.; 3 macropterous ♀, CEIOC 56026 • Tio Hugo; 28°36′59.5″S, 052°37′08.3″W; 2002; J.R.I. Ribeiro leg.; 1 apterous ♂, 1 macropterous ♂, 2 apterous ♀, 1 macropterous ♀, CEIOC 56025 • Tupanciretã, 28°54′24.8″S, 054°04′43.3″W; 2002; J.R.I. Ribeiro leg.; 1 macropterous ♀; CEIOC 56028.

Identification. Our specimens were recognized by the color of the mesopleuron, mainly brown and ventrally limited by a band of silvery setae (Fig. 9C). Other characteristics that helped us in the identification: antennomere I longer than head width, including eyes; abdominal segment VIII of males without apical projection on the ventral surface; and last abdominal laterotergite of females not projected posteriorly (Nieser and Melo 1997).

General distribution. Argentina, Brazil, Paraguay, Peru.

Distribution in Brazil. AL, CE, GO, MG, MS, MT, PA, PB, PE, RJ, **RS***, SE, SP.

Genus *Neogerris* Matsumura, 1913

***Neogerris lubricus* (White, 1879)**
Figure 9F, G

New records. BRAZIL – **Rio Grande do Sul** • Novos Cabrais, Parque Witeck; 29°47′09.6″S, 052°58′07.5″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 1 apterous ♀, CEIOC 76830 • São Borja; 28°42′07.4″S, 055°47′12″W; 2002; J.R.I. Ribeiro leg.; 1 ♂, CEIOC 56024.

Identification. Our specimens of *Neogerris lubricus* were distinguished from other species of *Neogerris* by the body length smaller than 5 mm; the pronotum of the apterous form longer than wide, with clearly defined anterior and posterior lobes; the posterior lobe of the pronotum covering the mesonotum entirely or almost entirely; and the abdominal segment VIII of the male, in dorsal view, with subequal length and width (Nieser and Melo 1997).

General distribution. Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago.

Distribution in Brazil. AL, AM, AP, BA, MA, MG, MS, MT, PA, PI, RJ, RO, **RS***, SE, SP.

Subfamily Rhagadotarsinae
Genus *Rheumatobates* Bergroth, 1892

***Rheumatobates bonariensis* (Berg, 1898)**
Figure 10A, B

New records. BRAZIL – **Rio Grande do Sul** • Santa Maria, Rio Ibicuí-Mirim; 29°38′13.1″S, 054°01′48.4″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 1 macropterous ♂, CEIOC 76831.

Identification. Our male specimen of *R. bonariensis* was recognized by the absence of modifications on the antennae and legs, in addition to the following characteristics: first antennal segment black and longer than the others; hind femur straight; and venter of abdominal segments VII and VIII deeply, longitudinally grooved (Fig. 10B) (Hungerford 1954).

General distribution. Argentina, Bolivia, Brazil, Paraguay, Peru, Uruguay.

Distribution in Brazil. MA, MT, RS, SC, SP.

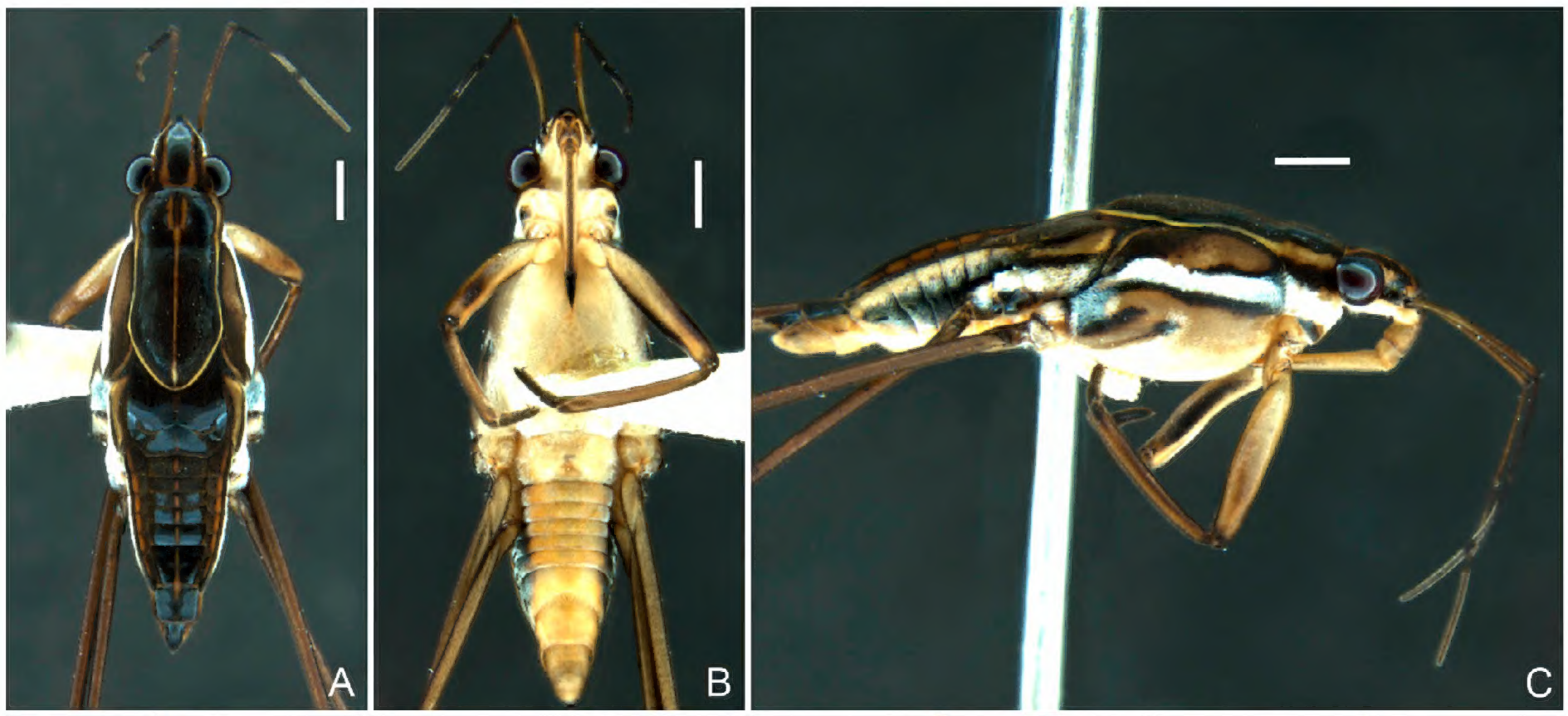

Figure 9. Collected specimens. **A–E.** *Limnogonus profugus*. **A–C.** Apterous male from Novos Cabrais, Parque Witeck (29°47′09.6″S, 052°58′07.5″W), habitus. **A.** Dorsal view. **B.** Ventral view. **C.** Lateral view. **D, E.** Macropterous female from São Luiz Gonzaga, Parque Witeck (28°12′29.6″S, 054°58′35.7″W), habitus. **D.** Dorsal view. **E.** Ventral view. **F, G.** *Neogerris lubricus*, apterous female from Novos Cabrais, Parque Witeck (29°47′09.6″S, 52°58′07.5″W), habitus. **F.** Dorsal view. **G.** Ventral view. Scale bars: 1 mm.

***Rheumatobates crassifemur crassifemur* Esaki, 1926**
Figure 10C–F

New records. BRAZIL – **Rio Grande do Sul** • Barra Funda; 27°55′41.4″S, 053°03′08.0″W; 28.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 2 apterous ♂, 6 apterous ♀, 1 macropterous ♀, CEIOC 76832.

Identification. This species was recognized by the following characteristics of the males: antennomere IV with a fairly uniform row of strong setae on the dorsolateral margin; hind trochanter incrassate, as thick as hind coxa, not armed with a very long basal spur, and inserted beyond the base of the hind femur; hind femur not straight; basal extremity of the hind femur bare; and basal lobe of the hind trochanter densely margined ventrally with long setae (Fig. 10C, D) (Hungerford 1954). Our females were identified by association with the males collected in the same area.

General distribution. Argentina, Bolivia, Brazil, Colombia, Panama, Paraguay.

Distribution in Brazil. ES, MG, MS, MT, PA, RJ, **RS***, SP.

Subfamily Trepobatinae
Tribe Trepobatini
Genus *Halobatopsis* Bianchi, 1896

***Halobatopsis platensis* (Berg, 1879)**
Figure 11A, B

New records. BRAZIL – **Rio Grande do Sul** • Novos Cabrais, Parque Witeck; 29°47′09.6″S, 052°58′07.5″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 2 apterous ♂, 8 apterous ♀, CEIOC 76943 • São Vicente do Sul, Rio Toropi; 29°39′19.4″S, 054°29′10.0″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 6 apterous ♂, 20 apterous ♀, 1 macropterous ♀, CEIOC 76944.

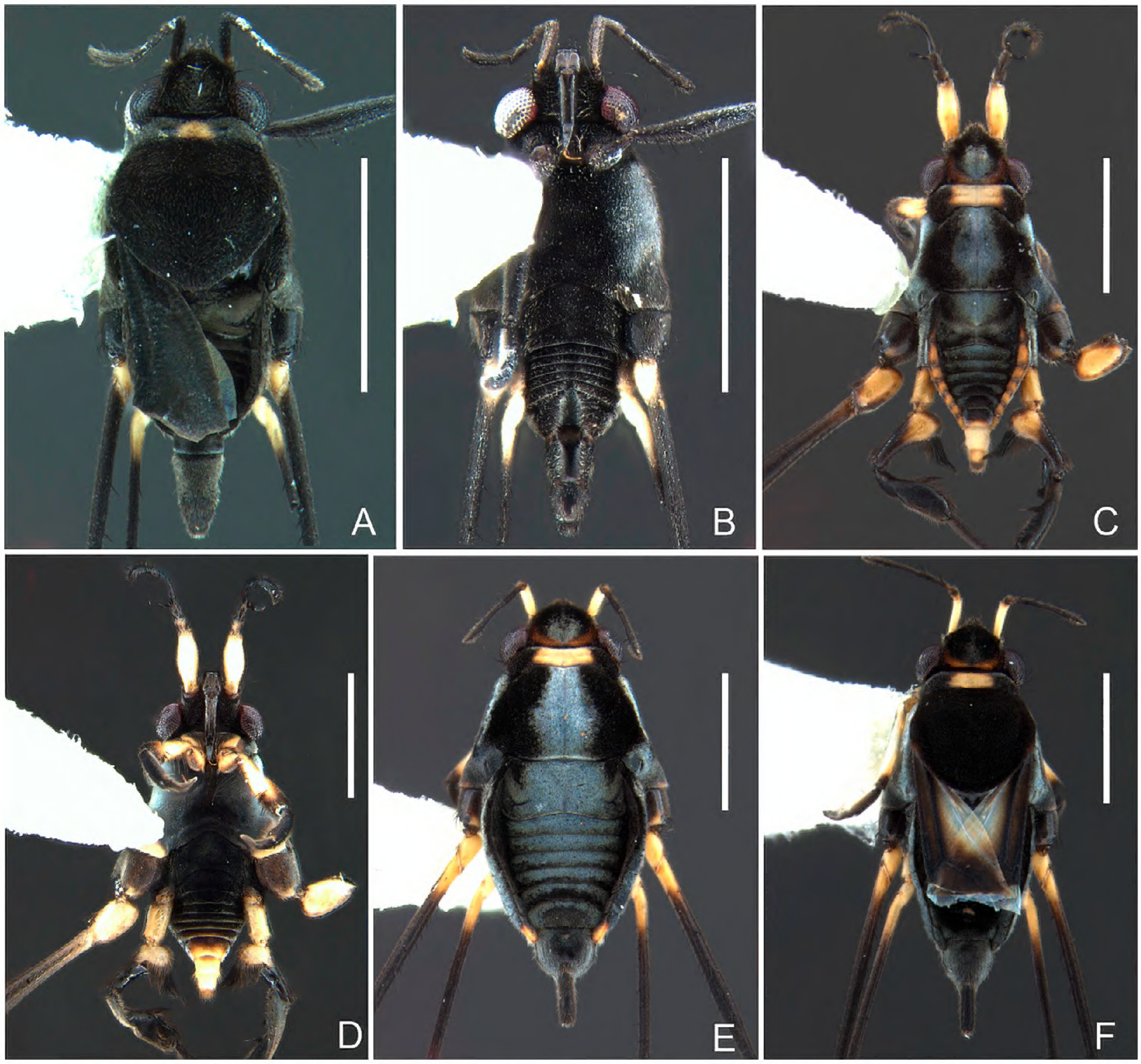

Figure 10. Collected specimens. **A, B.** *Rheumatobates bonariensis*, macropterous male from Santa Maria (29°38′13.1″S, 054°01′48.4″W), habitus. **A.** Dorsal view. **B.** Ventral view. **C–F.** *R. crassifemur crassifemur* from Barra Funda (27°55′41.4″S, 053°03′08.0″W), habitus. **C, D.** Apterous male. **C.** Dorsal view. **D.** Ventral view. **E, F.** Female. **E.** Apterous, dorsal view. **F.** Macropterous, dorsal view. Scale bars: 1 mm.

Identification. Our specimens were recognized by the following characteristics: mesonotum with longitudinal black marks; male abdominal segment VIII without ventral spine; and females with abdominal laterotergites horizontal or only slightly slanting upward (Nieser and Melo 1999).

General distribution. Argentina, Brazil, Peru, Uruguay.

Distribution in Brazil. AL, BA, DF, ES, GO, MA, MG, MS, MT, PI, PR, RJ, RS, SE, SP.

Halobatopsis spiniventris Drake & Harris, 1936

Figure 11C–H

New records. BRAZIL – **Rio Grande do Sul** • Jaguari, Arroio Jacaré; 29°32′34.0″S, 054°40′43.1″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 1 macropterous ♂, 1 apterous ♀, 3 macropterous ♀, CEIOC 76945 • Santiago, Rio Jaguarizinho; 29°21′44.3″S, 054°44′04.1″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 3 apterous ♂, 11 apterous ♀, 1 macropterous ♀, CEIOC 76947 • São Luiz Gonzaga, Fazenda do Cerro; 28°12′09.3″S, 054°58′21.1″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; stream; 2 apterous ♂, 6 apterous ♀, CEIOC 76946.

Identification. The male specimens collected in RS have their abdominal segment VIII with a dark brown to blackish ventral spine (Fig. 11E), and females have their abdominal laterotergites reflexed over the mediotergites (Fig. 11G), which are both diagnostic characteristics of *H. spiniventris* (Nieser and Melo 1999).

General distribution. Argentina, Brazil, Paraguay.

Distribution in Brazil. PR, RJ, RS, SC, SP.

Figure 11. Collected specimens. **A, B.** *Halobatopsis platensis*, apterous male from São Vicente do Sul, Rio Toropi (29°39′19.4″S, 054°29′10.0″W), habitus. **A.** Dorsal view. **B.** Ventral view. **C–H.** *H. spiniventris* from Jaguari (29°32′34.0″S, 054°40′43.1″W). **C–F.** Macropterous male. **C.** Habitus, dorsal view. **D.** Habitus, ventral view. **E, F.** Lateral view. **E.** Last abdominal segments. **F.** Habitus. **G, H.** Apterous female, habitus. **G.** Dorsal view. **H.** Ventral view. Scale bars: A–D, F–H = 1 mm; E = 0.2 mm.

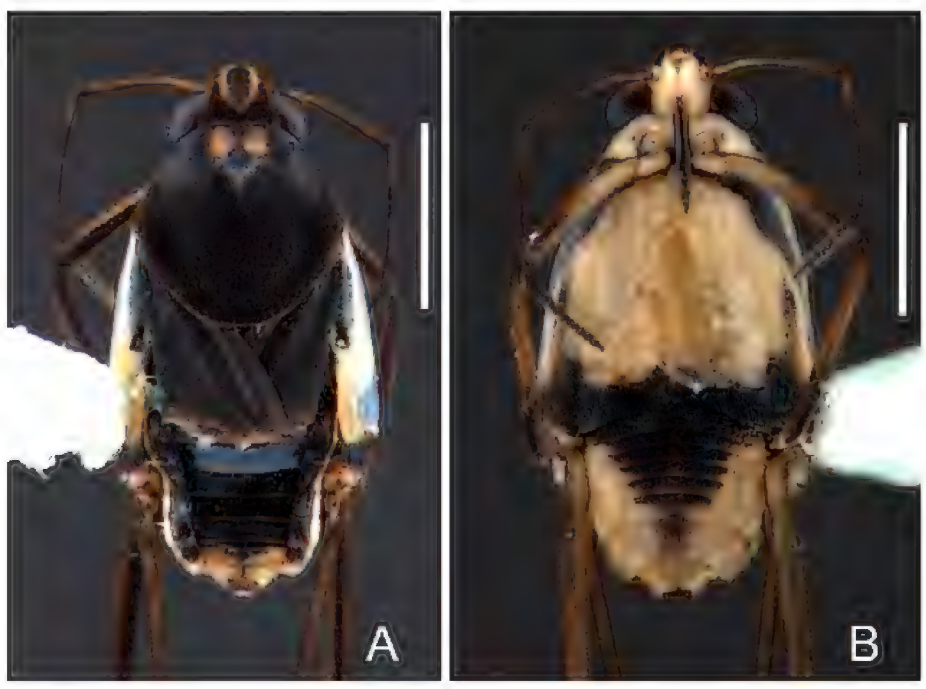

Figure 12. Collected specimen of *Ovatametra gualeguay*; macropterous female from Pantano Grande (30°11′54.5″S, 052°24′48.1″W), habitus. **A.** Dorsal view. **B.** Ventral view. Scale bars: 1 mm.

Genus *Ovatametra* Kenaga, 1942

***Ovatametra gualeguay* Bachmann, 1966**

Figure 12

New records. BRAZIL – **Rio Grande do Sul** • Pantano Grande, BR-290; 30°11′54.5″S, 052°24′48.1″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir; 5 macropterous ♀, CEIOC 76948.

Identification. Our female specimens of *Ovatametra gualeguay* were identified based on the body length over 2.75 mm; the interocular space in dorsal view wider than 1.75 times the width of an eye; and the color pattern of the body, which agrees with that described by Bachmann (1966).

General distribution. Argentina, Brazil.

Distribution in Brazil. MG, MT, **RS***, SP.

Family Hydrometridae
Subfamily Hydrometrinae
Genus *Hydrometra* Latreille, 1797

***Hydrometra argentina* Berg, 1879**

Figure 13

New record. BRAZIL – **Rio Grande do Sul** • Pantano Grande, BR-290; 30°11′54.5″S, 052°24′48.1″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir; 1 apterous ♀, CEIOC 76949.

Identification. We identified this female of *H. argentina*

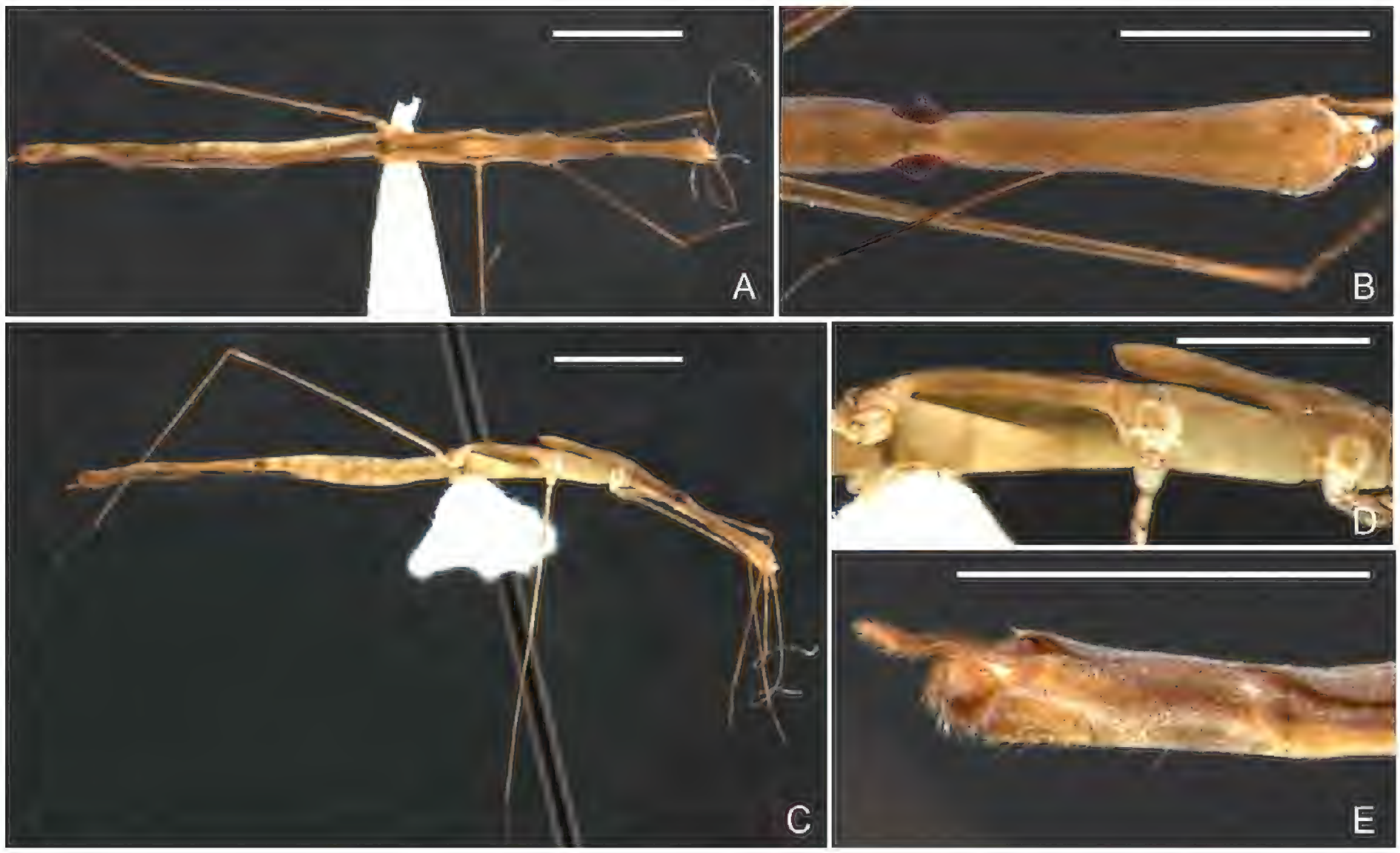

Figure 13. Collected specimen of *Hydrometra argentina*; apterous female from Pantano Grande (30°11′54.5″S, 052°24′48.1″W). **A, B.** Dorsal view. **A.** Habitus. **B.** Head. **C–E.** Lateral view. **C.** Habitus. **D.** Thorax. **E.** Last abdominal segments. Scale bars: A, C = 2 mm; B, D–E = 1 mm. Abdomen is twisted; posterior portion is upside down in A and C. Posterior projection of abdominal tergum VIII is kneaded in E.

by the body length shorter than 12.5 mm, the clypeus conate, clearly longer than broad (Fig. 13B), the pro- and mesoacetabula with two circular punctures each, and the metacetabula without circular punctures (Fig. 13D) (Moreira and Barbosa 2013). The specimen is not in pristine conditions and the abdomen is twisted, so that the posterior portion is upside down in Figure 13A and C. Additionally, the posterior projection of abdominal tergum VIII is kneaded (Fig. 13E), not as usually seen in this species.

General distribution. Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

Distribution in Brazil. AL, AM, AP, BA, ES, MG, MS, MT, PA, PB, PR, RJ, RS, SC, SE, SP.

Family Mesoveliidae
Subfamily Mesoveliinae
Genus *Mesovelia* Mulsant & Rey, 1852

***Mesovelia mulsanti* White, 1879**
Figure 14

New records. BRAZIL – **Rio Grande do Sul** • Santiago; 29°22′19.3″S, 054°44′41.3″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; flooded area; 2 apterous ♂, CEIOC 76950 • São Luiz Gonzaga, Fazenda do Cerro; 28°12′12.1″S, 054°57′41.7″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir; 1 apterous ♂, 4 apterous ♀; CEIOC 76951 •

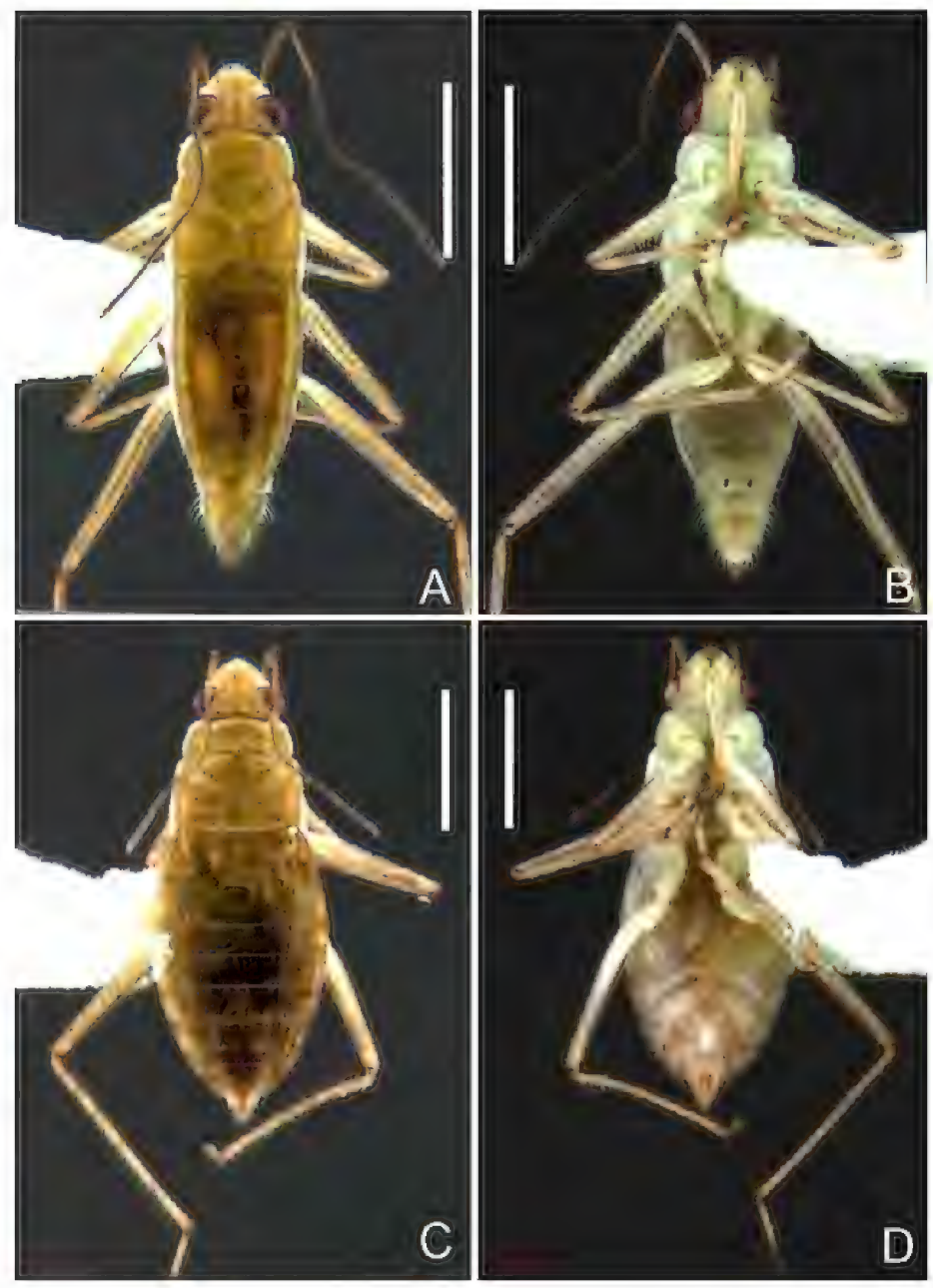

Figure 14. Collected specimens of *Mesovelia mulsanti* from São Luiz Gonzaga (28°12′32.0″S, 054°58′40.4″W), habitus. **A, B.** Apterous male. **A.** Dorsal view. **B.** Ventral view. **C, D.** Apterous female. **C.** Dorsal view. **D.** Ventral view. Scale bars: 1 mm.

São Luiz Gonzaga, Fazenda do Cerro; 28°12′32.0″S, 054°58′40.4″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir and stream; 3 apterous ♂, 1 apterous ♀, CEIOC 76952.

Identification. Our male specimens of *Mesovelia mulsanti* were identified by the following characteristics: middle femur with a row of 8–15 black spines on its posterior surface; and abdominal sternum VIII with two tightly packed clusters of stout black spinules (Spangler 1990). The females were identified by the presence of black spines on the middle femur and by association with the males collected in the same area.

General distribution. Antigua and Barbuda, Argentina, Aruba, Barbados, Belize, Bolivia, Bonaire, Brazil, Canada, Colombia, Costa Rica, Cuba, Curaçao, Dominica, Dominican Republic, French Guiana, Grenada, Guadeloupe, Guatemala, Guyana, Hawaiian Islands, Honduras, Jamaica, Klein Curaçao, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Martin, Saint Vincent and the Grenadines, Trinidad and Tobago, United States of America, United States Virgin Islands, Venezuela.

Distribution in Brazil. AL, AM, AP, BA, CE, ES, GO, MA, MG, MS, MT, PA, PI, PE, PR, RJ, RO, RS, SC, SE, SP.

Family Veliidae
Subfamily Microveliinae
Tribe Microveliini
Genus *Microvelia* Westwood, 1834

Microvelia braziliensis McKinstry, 1937

Figure 15

New records. BRAZIL – **Rio Grande do Sul** • São Luiz Gonzaga, Fazenda do Cerro; 28°12′07.9″S, 054°58′07.1″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; puddle; 9 macropterous ♂, 9 macropterous ♀, CEIOC 76953.

Identification. Our males were recognized by their abdominal segment VIII ventrally concave, with a pair of lateral triangular projections. Our specimens of *M. braziliensis* were also distinguished from other species of *Microvelia* by the following characteristics: body length 3.00–3.50 mm; hind femur of males and females surpassing the apex of the abdomen; and male hind tibia straight (Moreira 2012).

General distribution. Argentina, Bolivia, Brazil, Ecuador, Paraguay, Peru.

Distribution in Brazil. MG, RJ, **RS***, SC.

Microvelia mimula White, 1879

Figure 16

New records. BRAZIL – **Rio Grande do Sul** • Novos Cabrais, Parque Witeck; 29°47′09.6″S, 052°58′07.5″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 1 macropterous ♂, 1 apterous ♀, CEIOC 76958 • Pantano Grande, BR-290; 30°11′54.5″S, 052°24′48.1″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir; 1 apterous ♂, 2 macropterous ♂, 4 macropterous ♀, CEIOC 76955 • Santa Maria, Canabarro; 29°38′16.2″S, 054°01′15.8″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir; 3 macropterous ♂, 2 apterous ♀, 4 macropterous ♀, CEIOC 76956 • Santiago; 29°22′19.3″S, 054°44′41.3″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; flooded area; 1 apterous ♂, 1 macropterous ♂, 1 macropterous ♀, CEIOC 76954 • São Luiz Gonzaga, Fazenda do Cerro; 28°12′29.6″S, 054°58′35.7″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; stream; 1 macropterous ♂, 2 apterous ♀, 1 macropterous ♀, CEIOC 76957.

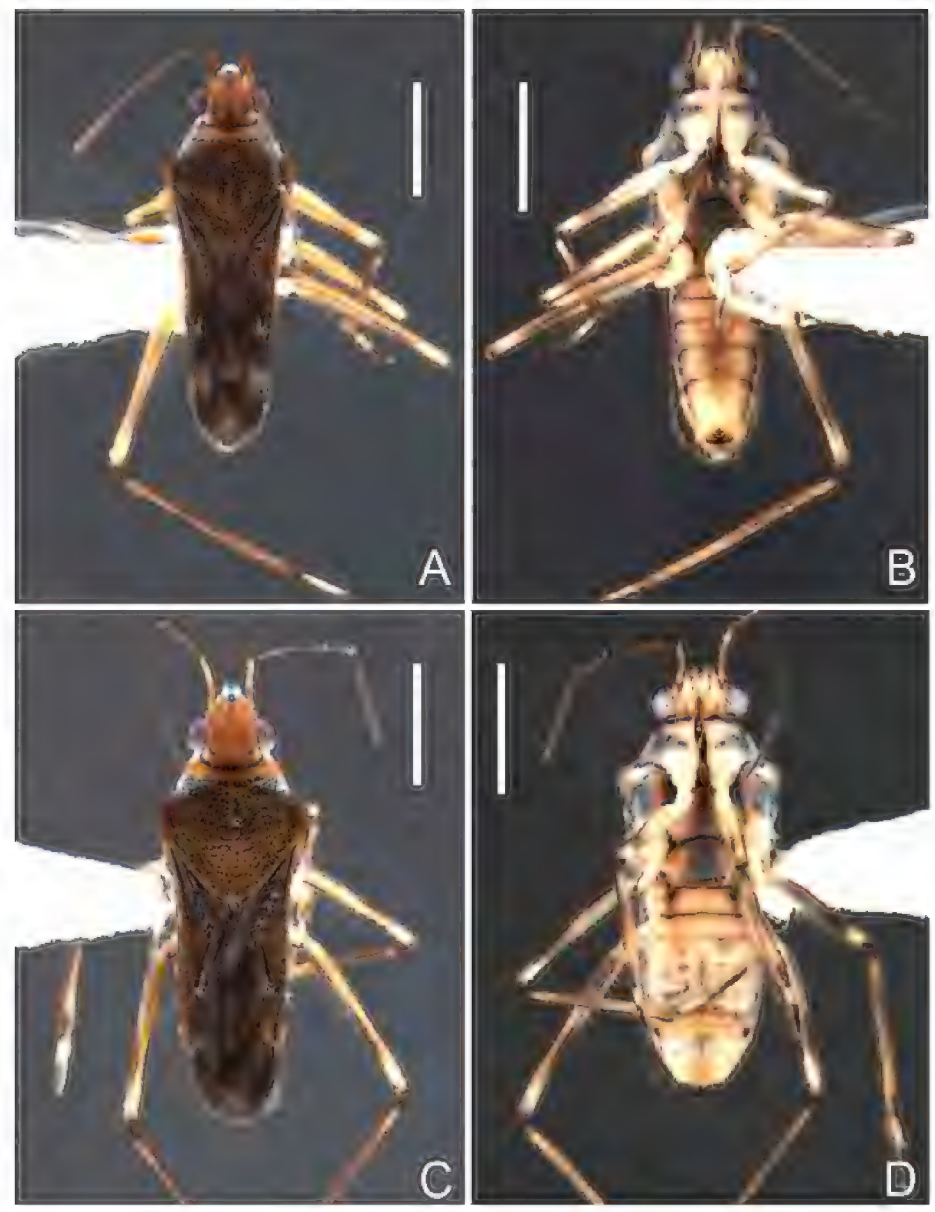

Figure 15. Collected specimens of *Microvelia braziliensis* from São Luiz Gonzaga (28°12′07.9″S, 054°58′07.1″W), habitus. **A, B.** Macropterous male. **A.** Dorsal view. **B.** Ventral view. **C, D.** Macropterous female. **C.** Dorsal view. **D.** Ventral view. Scale bars: 1 mm.

Identification. *Microvelia mimula* can be recognized by the terminalia of the male, which is distinctly modified, with the dorsum of abdominal segment VIII expanded laterally, the venter of this segment widely excavated on the posterior margin, and the proctiger with large lateral projections (Drake and Carvalho 1954). This species can also be distinguished from other congener species by the following characteristics: mesonotum of the apterous form covered by the pronotum (Fig. 16A, E); hind femur not surpassing the apex of the abdomen; and male hind tibia straight (Fig. 16D) (Moreira 2012).

General distribution. Argentina, Barbados, Brazil,

Figure 16. Collected specimens of *Microvelia mimula*, habitus. **A–D.** Males from Pantano Grande (30°11′54.5″S, 052°24′48.1″W). **A, B.** Apterous. **A.** Dorsal view. **B.** Ventral view. **C, D.** Macropterous. **C.** Dorsal view. **D.** Ventral view. **E, F.** Apterous female from Santa Maria (29°38′16.2″S, 054°01′15.8″W). **E.** Dorsal view. **F.** Ventral view. Scale bars: 1 mm.

Colombia, Costa Rica, Cuba, Ecuador, French Guiana, Galápagos Islands, Grenada, Panama, Paraguay, Peru, Puerto Rico, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

Distribution in Brazil. AL, AM, CE, ES, MA, MG, MS, MT, PA, RJ, **RS***, SC, SE, SP.

Microvelia pulchella Westwood, 1834

Figure 17

New records. BRAZIL – **Rio Grande do Sul** • Santa Maria, Canabarro; 29°38′16.2″S, 054°01′15.8″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; weir; 12 apterous ♂, 1 macropterous ♂, 6 apterous ♀, CEIOC 76960 • Santiago; 29°22′19.3″S, 054°44′41.3″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; flooded area; 6 apterous ♂, 6 apterous ♀, CEIOC 76959 • São José do Norte; 31°38′08″S, 051°25′39″W; 2002; J.R.I. Ribeiro leg.; 1 apterous ♂, CEIOC 56039.

Identification. Our specimens of *Microvelia pulchella* were recognized by the short pronotum of the apterous form, which does not cover the mesonotum (Fig. 17A, C); the bent hind tibia of the males (Fig. 17A, B); the male terminalia aligned with the longitudinal axis of the body; and the male abdominal segment VIII ventrally without depressions, projections or notches (Moreira 2012). Additionally, males are elongated, with the sides of body more or less parallel, whereas females are much more robust and rounded (Moreno et al. 2018).

General distribution. Alaska, Anguilla, Argentina, Aruba, Bahamas, Barbados, Bonaire, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curaçao, Dominican Republic, Ecuador, French Guiana, Grenada, Guadeloupe, Guatemala, Jamaica, Klein Bonaire, Klein Curaçao, Martinique, Mexico, Panama, Peru,

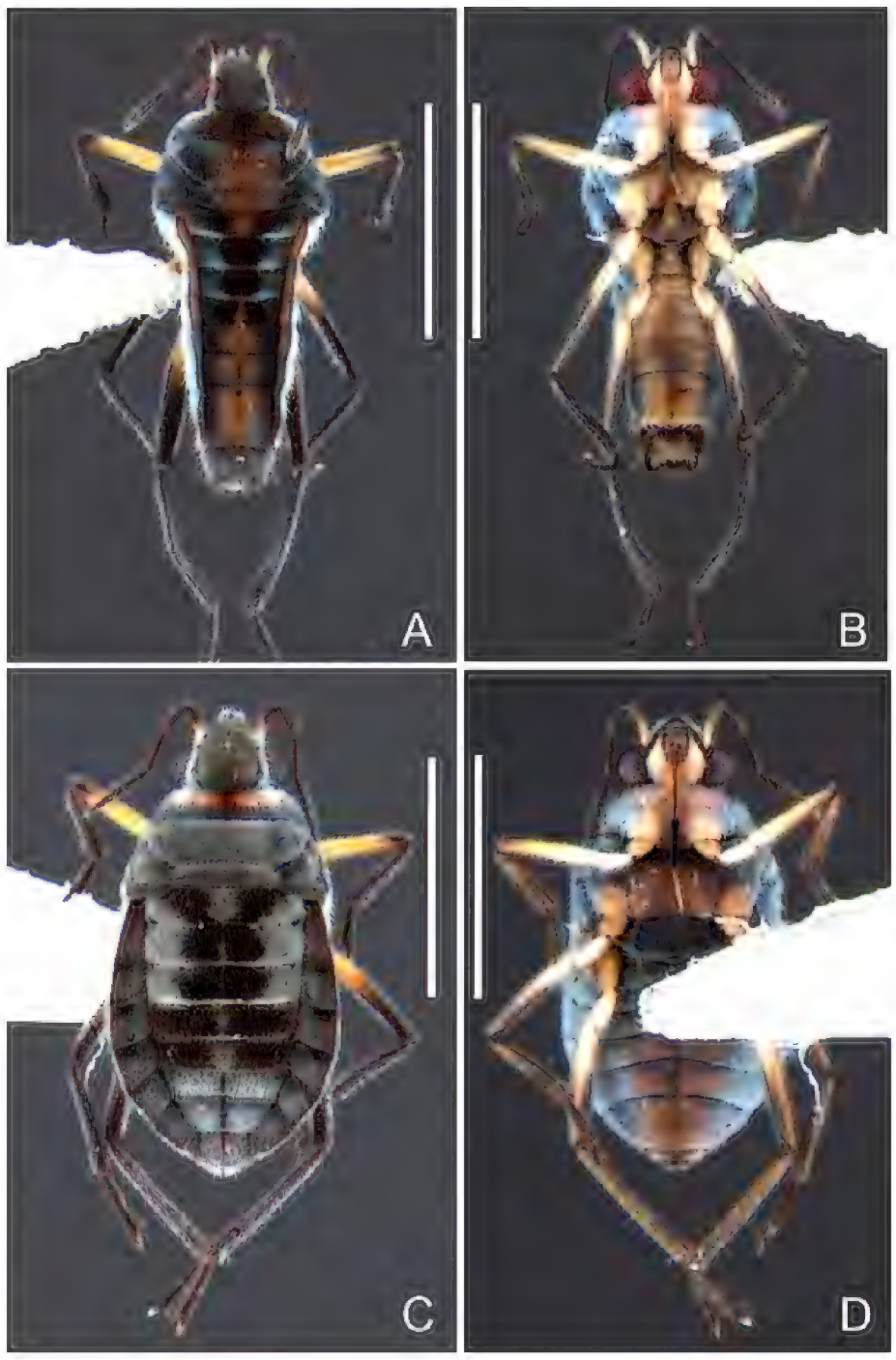

Figure 17. Collected specimens of *Microvelia pulchella* from Santa Maria (29°38′16.2″S, 054°01′15.8″W), habitus. **A, B.** Apterous male. **A.** Dorsal view. **B.** Ventral view. **C, D.** Apterous female. **C.** Dorsal view. **D.** Ventral view. Scale bars: 1 mm.

Puerto Rico, Saba, Saint Kitts and Nevis, Saint Martin, Saint Vincent and the Grenadines, Trinidad and Tobago, United States of America, United States Virgin Islands, Venezuela.

Distribution in Brazil. AL, AM, BA, ES, MA, MG, MS, PA, PE, PI, RJ, **RS***, SC, SE, SP.

Subfamily Rhagoveliinae
Genus *Rhagovelia* Mayr, 1865

***Rhagovelia rivulosa* Polhemus & Polhemus, 1985**
Figure 18

New records. BRAZIL – **Rio Grande do Sul** • Boa Vista do Buricá, Rio Buricá; 27°42′52.4″S, 054°08′06.7″W; 28.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 6 apterous ♂, 3 macropterous ♂, 10 apterous ♀, 6 macropterous ♀, CEIOC 76961.

Identification. This species can be distinguished from others of the *angustipes* complex (Polhemus 1997) by a set of characteristics presented by males and females. Males (Fig. 18A, B, D) have the body about 2.80 mm long; the mesonotum without a shiny black spot; the abdomen shiny black on a small patch centrally on mediotergite

Figure 18. Collected specimens of *Rhagovelia rivulosa* from Boa Vista do Buricá (27°42′52.4″S, 054°08′06.7″W), habitus. **A, B.** Apterous male. **A.** Dorsal view. **B.** Ventral view. **C.** Apterous female, dorsal view. **D.** Macropterous male, dorsal view. Scale bars: 1 mm.

VI, a large shiny black patch on mediotergite VII, and on tergum VIII; the margins of the abdominal laterotergites not sinuate; the middle coxa blackish; the anterior trochanter unarmed; the hind femur with 7–9 spines on the posterior surface; and the posterior tibia 1.1 times as long as the hind femur (Nieser and Polhemus 1999). Females have the body about 3.15 mm long; the antennomere II subequal to slightly longer than the antennomere III; the abdominal laterotergites vertical or nearly so, not reflexed and folded over the mediotergites, and not distinctly thickened and/or strongly convergent posteriorly (Fig. 18C); and the hind femur with at least 6 spines ventrally (Nieser and Polhemus 1999).

General distribution. Brazil.

Distribution in Brazil. MG, MT, **RS***, SC.

***Rhagovelia robusta* Gould, 1931**
Figure 19

New records. BRAZIL – **Rio Grande do Sul** • São Luiz Gonzaga, Fazenda do Cerro; 28°12′13.2″S, 054°57′41.6″W; 27.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; stream; 17 apterous ♂, 7 apterous ♀, CEIOC 76962.

Identification. This species can be distinguished from others of the *robusta* group (Polhemus 1997; Moreira et al. 2012) by the following characteristics of males: small black denticles present on jugum and adjacent region of proepisternum; pronotum mostly dark brown to black,

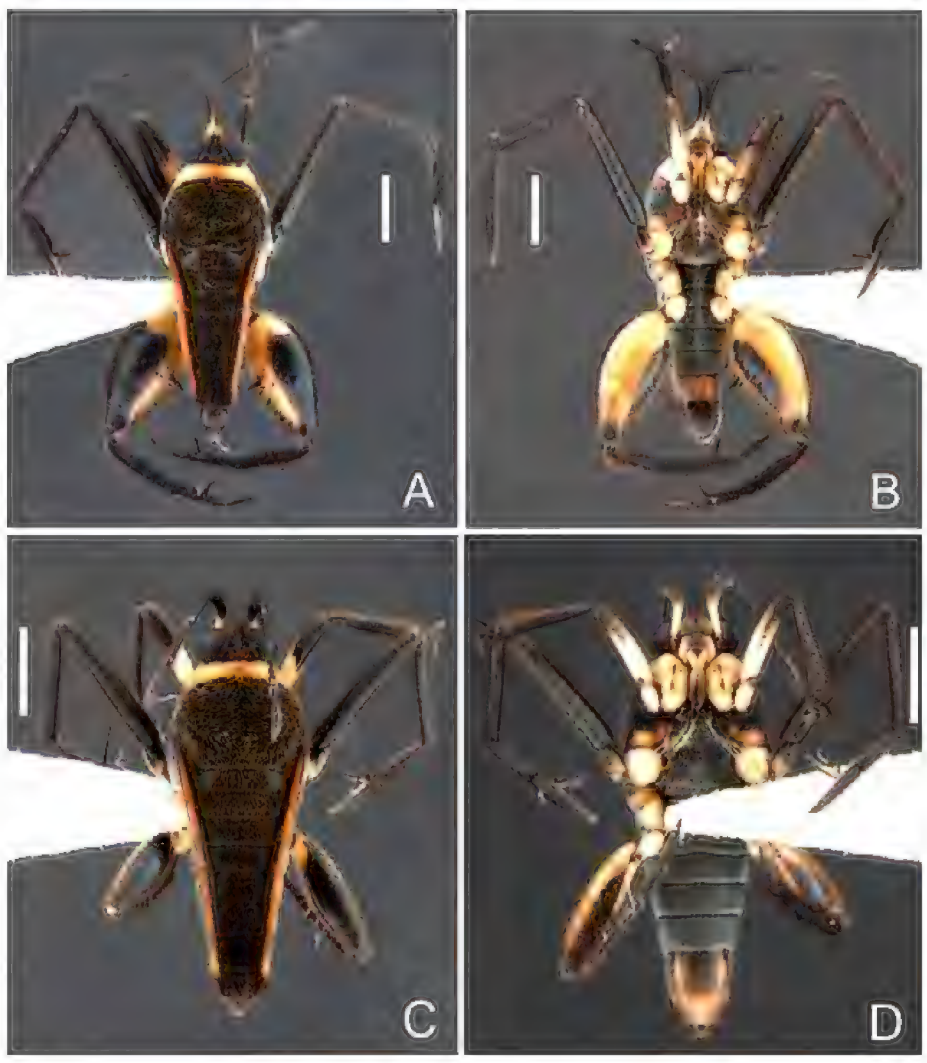

Figure 19. Collected specimens of *Rhagovelia robusta* from São Luiz Gonzaga (28°12′13.2″S, 054°57′41.6″W), habitus. **A, B.** Apterous male. **A.** Dorsal view. **B.** Ventral view. **C, D.** Apterous female. **C.** Dorsal view. **D.** Ventral view. Scale bars: 1 mm.

strongly contrasting with yellowish brown or orange brown mark on anterior lobe; middle trochanter dark brown to black; hind femur with 3–4 irregular rows of spines, with a large spine near its middle dorsally displaced from others; and hind trochanter armed only with small subequal spines (Magalhães et al. 2016). Our females were identified by association with the males collected in the same area and by comparison with other identified specimens deposited in the CEIOC.

General distribution. Argentina, Brazil, Paraguay.

Distribution in Brazil. ES, GO, MG, MA, MT, PA, RJ, **RS***, SC, SE, SP.

Subfamily Veliinae
Genus *Callivelia* Polhemus, 2021

***Callivelia bipunctata* (Rodrigues, Moreira, Nieser, Chen & Melo, 2014)**
Figure 20A–C

New records. BRAZIL – **Rio Grande do Sul** • Jaguari, Arroio Jacaré; 29°32′34.0″S, 054°40′43.1″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 1 brachypterous ♂, CEIOC 76967.

Identification. This male specimen of *C. bipunctata* was distinguished from the other three species of *Callivelia* by the absence of a prominent vertical process centrally on the pronotum (Fig. 20C); the body length smaller than 5 mm; antennomere II distinctly shorter than the

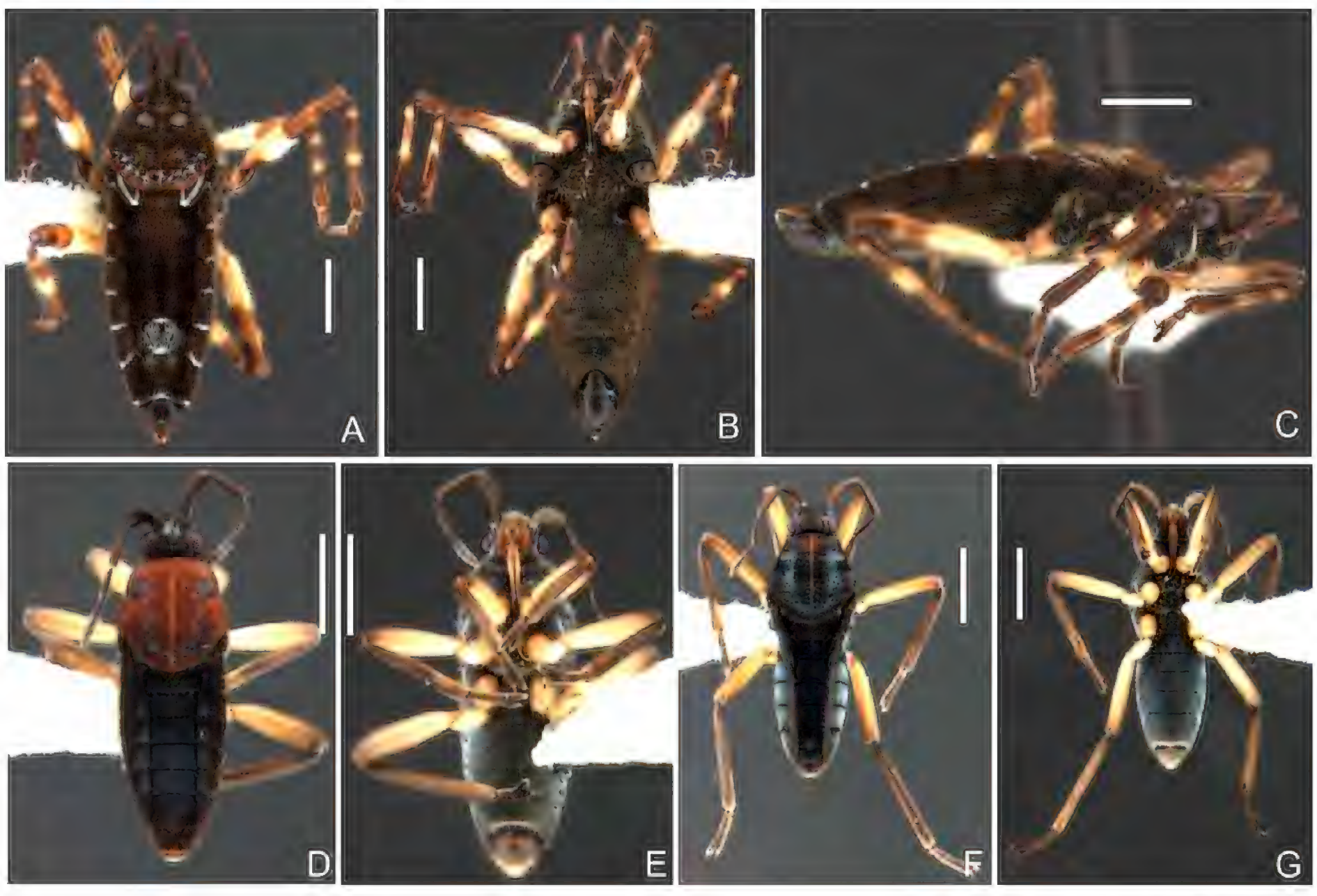

Figure 20. Collected specimens, habitus. **A–C.** *Callivelia bipunctata*, micropterous male from Jaguari (29°32′34.0″S, 054°40′43.1″W). **A.** Dorsal view. **B.** Ventral view. **C.** Lateral view. **D–G.** *Oiovelia brasiliensis* from Santiago (29°21′44.3″S, 054°44′04.1″W). **D, E.** Apterous male. **D.** Dorsal view. **E.** Ventral view. **F, G.** Apterous female. **F.** Dorsal view. **G.** Ventral view. Scale bars: 1 mm.

antennomere III; and the paramere slender and elongate (Polhemus 2021).

General distribution. Brazil, Paraguay.

Distribution in Brazil. MG, MS, MT, **RS***.

Genus *Oiovelia* Drake & Maldonado-Capriles, 1952

***Oiovelia brasiliensis* Moreira, Nessimian & Rúdio, 2010**

Figure 20D–G

New records. BRAZIL – **Rio Grande do Sul** • Santiago, Rio Jaguarizinho; 29°21′44.3″S, 054°44′04.1″W; 26.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; river; 6 apterous ♂, 2 macropterous ♂, 2 apterous ♀, 3 macropterous ♀, CEIOC 76966.

Identification. Our specimens of *O. brasiliensis* were recognized by the following diagnostic characteristics: pronotum reddish orange and legs yellowish to light brown; male proctiger with a pair (1+1) of small spines medially on dorsal surface; and paramere with a slight ventral expansion and apex rounded, not hook-like (Moreira et al. 2010; Floriano and Rodrigues 2016). *Oiovelia machadoi* Rodrigues & Moreira, 2016 is the only described species of the genus that shares with *O. brasiliensis* the spines medially on the proctiger, but differs from it by the pronotum and legs blackish, and the male paramere not expanded on the ventral surface (Floriano and Rodrigues 2016).

General distribution. Brazil.

Distribution in Brazil. ES, MG, RJ, RS, SP.

Genus *Paravelia* Breddin, 1898

***Paravelia capixaba* Moreira, Nessimian & Rúdio, 2010**

Figure 21A–C

New records. BRAZIL – **Rio Grande do Sul** • Lagoa Vermelha; 28°15′00.8″S, 051°29′37.3″W; 28.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 1 apterous ♂, CEIOC 76968.

Identification. This specimen was identified by its small body densely covered by long setae (Fig. 21A–C; Rodrigues et al. 2014), along with the following characteristics: antennomere III longer than antennomere I; thoracic sterna without tubercles; trochanters and femora without spines; tibiae with a ventral row of acute black spinules throughout their length; male proctiger without central projections; and parameres symmetrical, narrow,

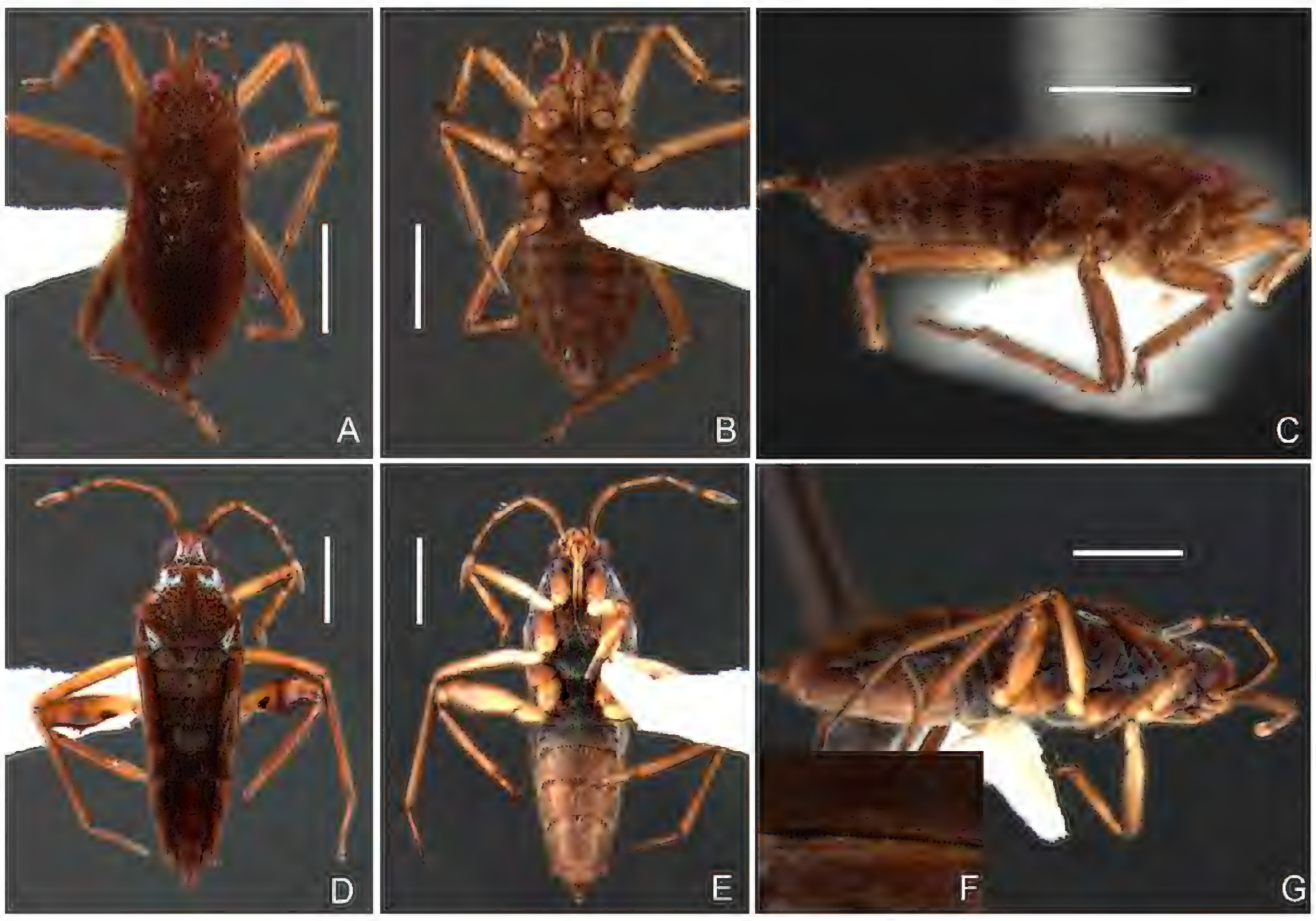

Figure 21. Collected specimens. **A–C.** *Paravelia capixaba*, apterous female from Lagoa Vermelha (28°15′00.8″S, 051°29′37.3″W), habitus. **A.** Dorsal view. **B.** Ventral view. **C.** Lateral view. **D–G.** *Stridulivelia astralis,* macropterous female from Novos Cabrais, Parque Witeck (29°47′09.6″S, 052°58′07.5″W). **D.** Habitus, dorsal view. **E.** Habitus, Ventral view. **F.** Stridulatory structure on lateral margin of abdominal laterotergites. **G.** Habitus, lateral view. Scale bars: 1 mm.

elongated, strongly curved, with a small apical hook directed ventrally (Moreira et al. 2010)

General distribution. Brazil.

Distribution in Brazil. AM, ES, MG, PA, **RS***.

Genus *Stridulivelia* Hungerford, 1929

***Stridulivelia astralis* (Drake & Harris, 1938)**
Figure 21D–G

New records. BRAZIL – **Rio Grande do Sul** • Novos Cabrais, Parque Witeck; 29°47′09.6″S, 052°58′07.5″W; 25.XI.2019; J.M.S. Rodrigues, I.R.S. Cordeiro, O.M. Magalhães, E.A. Joaquim Jr. & L. Nery leg.; lake; 3 apterous ♀, CEIOC 76969.

Identification. These female specimens of *S. astralis* were identified by the following characteristics: body length 3.40–4.30 mm; humeral angles of the pronotum not spinose; stridulatory structures present on the dorsum of the hind femur; stridulatory structure on the lateral margin of the abdominal laterotergites formed by a row of tightly packed minute pegs; transverse lateral sulci present on the first three visible abdominal segments; middle tarsus with narrow, falcate claws and setae-like arolia; and hind femur incrassate, more than twice as wide as middle femur, with a spine on distal two-thirds of posterior margin distinctly larger than others (Floriano et al. 2017).

General distribution. Argentina, Brazil, Paraguay.

Distribution in Brazil. MA, MG, MT, MS, **RS***, TO.

Discussion

Our work increases to 27 the number of semiaquatic bug species recorded from Rio Grande do Sul (Table 1; Fig. 22). Seven genera (*Brachymetra*, *Callivelia*, *Microvelia*, *Neogerris*, *Ovatametra*, *Paravelia*, and *Stridulivelia*) and 13 species are recorded for the first time from the state. Eight of these species are also newly recorded from southern Brazil (*B. albinervus*, *Limnogonus profugus*, *N. lubricus*, *Rheumatobates crassifemur crassifemur*, *Ov. gualeguay*, *C. bipunctata*, *P. capixaba*, and *Str. astralis*), and five are recorded for the second time from this region of the country (*Mi. braziliensis*, *Mi. mimula*, *Mi. pulchella*, *Rhagovelia rivulosa*, and *Rha. robusta*).

Additionally, we expand the distribution in RS for five species previously recorded from the state: *Rhe. bonariensis*, *Halobatopsis platensis*, *Ha. spiniventris*, *Hydrometra argentina*, and *Mesovelia mulsanti*. Among the 14 species of Gerromorpha previously recorded from RS, we did not collect specimens of *L. ignotus*, *Rha. janeira, Rha. lucida*, *Rha. novana*, *Rha. plaumanni*, *Rha. thaumana*, *Rha. trepida*, and *Steinovelia virgata*. We did not find any of the *Rhagovelia* species previously known from RS, but added two species of this genus to the state.

Table 1. General distribution of the 27 species of Gerromorpha recorded from Rio Grande do Sul, and distribution within Brazilian biomes. New records are marked with an asterisk. (Atl. For., Atlantic Forest; S.A. + T.&T., South America and, in some cases, also Trinidad and Tobago).

Species	General distribution				Distribution in Brazilian biomes					
	Brazil	S.A. + T. & T.	Neotropical	Americas	Amazon	Caatinga	Cerrado	Atl. For.	Pantanal	Pampa
Brachymetra albinervus			X		X	X	X	X		X*
Limnogonus ignotus		X			X		X	X	X	
Limnogonus profugus		X			X	X	X	X	X	X*
Neogerris lubricus			X		X	X	X	X	X	X*
Rheumatobates bonariensis		X					X	X		X*
Rheumatobates crassifemur crassifemur			X		X	X	X	X	X	
Halobatopsis platensis		X				X	X	X		X*
Halobatopsis spiniventris		X						X		X*
Ovatametra gualeguay		X					X	X		X*
Hydrometra argentina			X		X	X	X	X	X	X*
Mesovelia mulsanti				X	X	X	X	X		X
Microvelia braziliensis		X					X	X		X*
Microvelia mimula			X		X	X	X	X	X	X*
Microvelia pulchella				X	X	X	X	X		X*
Rhagovelia janeira		X						X		
Rhagovelia lucida		X						X		
Rhagovelia novana		X						X		X
Rhagovelia plaumanni		X						X		X
Rhagovelia rivulosa	X				X		X	X		
Rhagovelia robusta		X			X		X	X		X*
Rhagovelia thaumana	X							X		
Rhagovelia trepida	X							X		
Callivelia bipunctata		X					X	X		X*
Oiovelia brasiliensis	X						X	X		
Paravelia capixaba	X				X	X	X	X		
Steinovelia virgata		X			X		X	X		X
Stridulivelia astralis		X			X		X	X*	X	

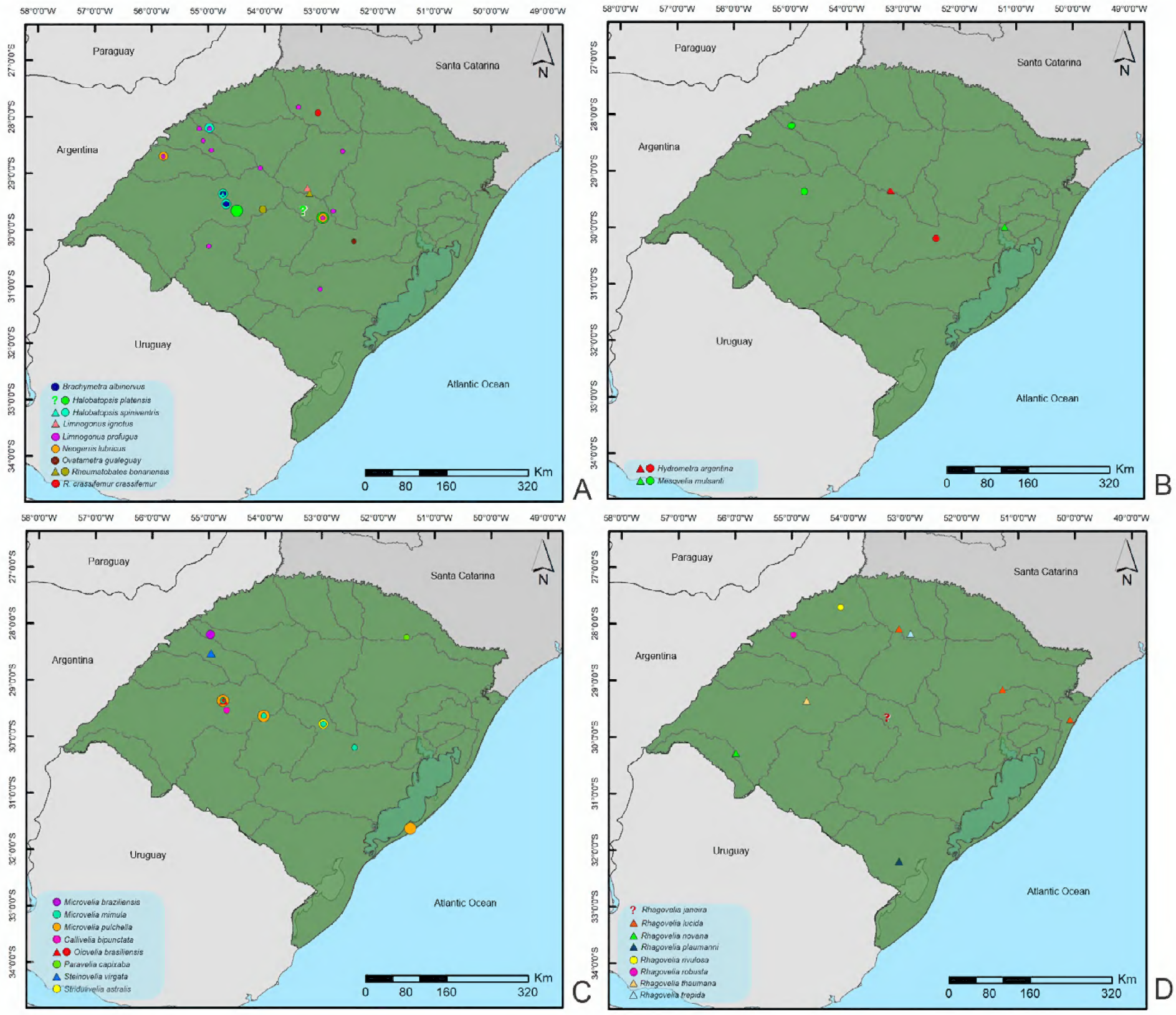

Figure 22. Geographical distribution of Gerromorpha recorded from Rio Grande do Sul, southern Brazil. Maps show the boundaries of the 25 hydrographic regions of the state. Triangles indicate previous records, circles indicate new records, question marks indicate imprecise records (only the state is known, but not a specific locality). **A.** Gerridae. **B.** Hydrometridae and Mesoveliidae. **C.** Veliidae: Microveliinae and Veliinae. **D.** Veliidae: Rhagoveliinae.

Oiovelia brasiliensis was previously recorded by Moreira and Campos (2012) from Santiago municipality, Jaguarizinho River, under Ernesto Alves bridge (−29.3676, −054.7365), and we only collected this species in the same river, at 0.6 km to the north of the previous record. In contrast, *Ha. spiniventris* was collected in the same river both previously (Moreira and Campos 2012) and in our samples, but we expand its distribution to Jaguari municipality, about 20 km south from Santiago, and to São Luiz Gonzaga municipality, about 130 km to the northwest. Furthermore, both Jaguari and São Luiz Gonzaga are in the Pampa biome, while Santiago is in the Atlantic Forest biome.

Thirteen species were collected for the first time in the Pampa and one in the Atlantic Forest (Table 1). All of the 27 species now known from RS occur in the Atlantic Forest, while nine (33.3%) are not found in the Pampa. Most species (19 spp., 70.4%) represented in the state have a wide distribution in Brazil and are recorded from at least three of its six biomes. Four species (14.8%) are found in all Brazilian biomes, three (11.1%) are absent only from the Pantanal, three (11.1%) are found only in the Atlantic Forest and the Pampa, one (3.7%) only in the Cerrado and the Atlantic Forest, and four (14.8%) only in the Atlantic Forest. No species are endemic from the Pampa.

Finally, considering only the distribution within RS, six species are recorded just from the Pampa (*Ha. platensis*, *Ov. gualeguay*, *Mi. braziliensis*, *Rha. robusta*, *C. bipunctata*, and *P. capixaba*), eight only from the Atlantic Forest (*Rhe. crassifemur crassifemur*, *Rha. janeira*, *Rha. lucida*, *Rha. rivulosa*, *Rha. thaumana, Rha. trepida*, *Oi. brasiliensis*, and *Str. astralis)*, and 13 from both biomes (*B. albinervus*, *L. ignotus*, *L. profugus*, *N. lubricus*, *Rhe. bonariensis*, *Ha. spiniventris*, *Hy. argentina*, *Me. mulsanti*, *Mi. mimula*, *Mi. pulchella*, *Rha. novana, Rha. plaumanni*, and *Ste. virgata*).

Acknowledgements

This work was conducted with a permit from the National System of Biodiversity Information (SISBIO; permit #42617-3). We thank Isabelle R.S. Cordeiro and Leticia Nery for their help during our fieldwork in 2019. Isabelle also confirmed our identifications of *Brachymetra albinervus* and *Hydrometra argentina*. We thank Mr. Henrique Witeck and Mr. Mario for their help during our collections in Parque Witeck (Novos Cabrais) and Fazenda do Cerro (São Luiz Gonzaga), respectively. JMSR benefited from a postdoctoral fellowship (#E-26/202.317/2018) provided by the State of Rio de Janeiro Research Foundation (FAPERJ). OMM from a PhD scholarship provided by the Coordination for the Improvement of Higher Education Personnel (CAPES). JAJ benefited from a scientific initiation scholarship provided by the Brazilian Council for Scientific and Technological Development (PIBIC/CNPq). FFFM benefited from grants provided by FAPERJ (#E-26/203.207/2017, #E-26/201.066/2020) and CNPq (#301942/2019-6).

References

Andersen NM (1982) The semiaquatic bugs (Hemiptera, Gerromorpha). Phylogeny, adaptations, biogeography, and classification. Entomonograph 3: 1–455.

Bachmann AO (1966) *Ovatametra gualeguay*, nueva espécie de Gerridae de la Republica Argentina (Hemiptera). Neotropica 12 (39): 87–90.

Bacon JA (1956) A study of the genus *Rhagovelia* (Hemiptera, Veliidae) of the Western Hemisphere. University of Kansas Science Bulletin 38: 695–913.

Cordeiro IRS (2017) Revisão taxonômica de *Brachymetra* Mayr, 1865 (Insecta: Heteroptera: Gerridae). Master thesis, Universidade Federal Rural do Rio de Janeiro, Rio de Janeiro, Brazil, 96 pp.

Drake CJ, Carvalho JCM (1954) New waterstriders from Brazil (Hemiptera). Proceedings of the Biological Society of Washington 67: 223–226.

Floriano CFB, Rodrigues HDD (2016) A new species of *Oiovelia* (Heteroptera: Gerromorpha: Veliidae) from Mesoamerica, with an identification key to the genus. Zootaxa 4144 (4): 584–592. https://doi.org/10.11646/zootaxa.4144.4.8

Floriano CFB, Moreira FFF, Bispo PC (2017) South American species of *Stridulivelia* (Hemiptera: Heteroptera: Veliidae): identification key, diagnoses, illustrations, and updated distribution. Proceedings of the Entomological Society of Washington 119 (1): 24–46.

Franco CL, Lima LRC, Rodrigues JMS, Azevêdo CAS, Moreira FFF (2020) New records of Gerromorpha (Insecta, Hemiptera, Heteroptera) from Piauí state, northeastern Brazil. Check List 16 (6): 1755–1763. https://doi.org/10.15560/16.6.1755

Franco CL, Rodrigues JMS, Azevêdo CAS, Moreira FFF (2021) Gerromorpha (Insecta, Hemiptera, Heteroptera) from eastern Maranhão state, northeastern Brazil. Check List 17 (2): 551–568. https://doi.org/10.15560/17.2.551

Hungerford H (1954) The genus *Rheumatobates* Bergroth (Hemiptera-Gerridae). The University of Kansas Science Bulletin 36: 529–587. https://doi.org/10.5962/bhl.part.24625

IBGE (Instituto Brasileiro de Geografia e Estatística) (2018) Brasil em números = Brazil in figures. Centro de Documentação e Disseminação de Informações 26: 1–512.

IBGE (Instituto Brasileiro de Geografia e Estatística) (2019) Biomas e Sistema Costeiro-Marinho do Brasil: compatível com a escala 1:250 000. Coordenação de Recursos Naturais e Estudos Ambientais, Série Relatórios Metodológicos 45: 1–168.

IBGE (Instituto Brasileiro de Geografia e Estatística) (2021) Cidades e estados. https://www.ibge.gov.br/cidades-e-estados.html?view=municipio. Accessed on: 2021-8-2.

Magalhães OM, Moreira FFF, Galvão C (2016) A new species of *Rhagovelia* Mayr, 1865 (Hemiptera: Heteroptera: Veliidae) from Pará state, with an updated key to Brazilian species of the *robusta* group. Zootaxa 4171 (3): 586–594. https://doi.org/10.11646/zootaxa.4171.3.12

McKinstry AP (1937) Some new species [of] *Microvelia* (Veliidae, Hemiptera). Journal of the Kansas Entomological Society 10 (1): 30–41.

MMA (2003) Resolução Nº 32, de 15 de outubro de 2003. Conselho Nacional de Recursos Hídricos, Ministério do Meio Ambiente, Brasília, Brazil, 2003.

Moreira FFF (2012) Sinopse da fauna de Veliidae (Insecta: Heteroptera: Gerromorpha) ocorrente na Região Sudeste do Brasil. PhD thesis, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 369 pp.

Moreira FFF (2015) The semiaquatic gerromorphans. In: Panizzi AR, Grazia J (Eds.), True bugs (Heteroptera) of the Neotropics. Springer Science + Business Media, Dordrecht, Netherlands, 113–156. https://doi.org/10.1007/978-94-017-9861-7_6

Moreira FFF (2021a) Gerridae in catálogo taxonômico da fauna do Brasil. PNUD. https://fauna.jbrj.gov.br/fauna/faunadobrasil/2377. Accessed on 2021-4-22.

Moreira FFF (2021b) Hebridae in catálogo taxonômico da fauna do Brasil. PNUD. http://fauna.jbrj.gov.br/fauna/faunadobrasil/1882. Accessed on 2021-4-22.

Moreira FFF (2021c) Hydrometridae in catálogo taxonômico da fauna do Brasil. PNUD. https://fauna.jbrj.gov.br/fauna/faunadobrasil/948. Accessed on 2021-4-22.

Moreira FFF (2021d) Mesoveliidae in catálogo taxonômico da fauna do Brasil. PNUD. https://fauna.jbrj.gov.br/fauna/faunadobrasil/1841. Accessed on 2021-4-22.

Moreira FFF (2021e) Veliidae in catálogo taxonômico da fauna do Brasil. PNUD. https://fauna.jbrj.gov.br/fauna/faunadobrasil/1596. Accessed on 2021-4-22.

Moreira FFF, Barbosa JF (2013) A new Hydrometra (Hemiptera: Heteroptera: Hydrometridae) from northeastern Brazil, with a key to the species recorded from the country. Zootaxa 3619 (1): 70–74. https://doi.org/10.11646/zootaxa.3619.1.4

Moreira FFF, Campos GGF (2012) New distributional data concerning some Gerromorpha (Insecta: Hemiptera: Heteroptera) from Brazil. Check List 8 (3): 542–547. https://doi.org/10.15560/8.3.542

Moreira FFF, Barbosa JF, Ribeiro JRI (2012) Veliidae (Insecta, Heteroptera, Gerromorpha) from southeastern Brazil: three new species from Rio de Janeiro state, a new species group for Neotropical *Rhagovelia* Mayr, and notes on distribution and synonymy. Revista Brasileira de Entomologia 56 (2): 147–158. https://doi.org/10.1590/s0085-56262012005000023

Moreira FFF, Nessimian JL, Rúdio JA, Salles FF (2010) New species and new records of Veliidae from Espírito Santo State and adjacent Minas Gerais state, Brazil, with notes on nomenclature (Insecta: Heteroptera: Gerromorpha). Journal of Natural History 44 (45): 2761–2801. https://doi.org/10.1080/00222933.2010.512423

Moreira FFF, Barbosa JF, Ribeiro JRI, Alecrim VP (2011a) Checklist and distribution of semiaquatic and aquatic Heteroptera (Gerromorpha and Nepomorpha) occurring in Brazil. Zootaxa 2958: 1–74. https://doi.org/10.11646/zootaxa.2958.1.1

Moreira FFF, Ribeiro JRI, Nessimian JL, Itoyama MM, Castanhole MMU, Pereira LLV (2011b) New records and distribution expansions for Neotropical water-striders (Insecta: Heteroptera: Gerromorpha). Check List 7 (3): 303–309. https://doi.org/10.15560/7.3.303

Moreira FFF, Rodrigues HDD, Sites RW, Cordeiro IRS, Magalhães OM (2018) Order Hemiptera. In: Hamada N, Thorp JH, Rogers D

(Eds.) Thorp and Covich's freshwater invertebrates. Fourth edition. Volume 3: keys to Neotropical Hexapoda. Elsevier, London, United Kingdom, 175–216. https://doi.org/10.1016/b978-0-12-804223-6.00007-x

Moreira FFF, Floriano CFB, Rodrigues HDD, Sites RW (2020) Revision of the American genus *Steinovelia* Polhemus & Polhemus, 1993 (Heteroptera: Gerromorpha: Veliidae). Zootaxa 4729 (1): 77–91. https://doi.org/10.11646/zootaxa.4729.1.5

Moreno-R C, Molina-J W, Barbosa JF, Moreira FFF (2018) Aquatic and semiaquatic bugs (Insecta, Hemiptera, Heteroptera) from Toluviejo Municipality, Sucre Department, Caribbean region of Colombia. Check List 14 (6): 985–1002. https://doi.org/10.15560/14.6.985

Museo Civico di Rovereto (2010) Catalogo informatizzato del patrimonio conservato dalla Fondazione MCR. Zoologia. http://www.fondazionemcr.it/extendedsearch_museo.jsp?id_schema=69&COL0001=1&COL0002=1&ID_LINK=113754&area=295. Accessed on: 2010-11-20.

Neering T (1954) Morphological variations in *Mesovelia mulsanti* (Hemiptera, Mesoveliidae). University of Kansas Science Bulletin 36: 125–148.

Neri DB, Kotzian CB, Siegloch AE (2005) Composição de Heteroptera aquáticos e semi-aquáticos na área de abrangência da U.H.E. Dona Francisca, RS, Brasil: fase de preenchimento. Iheringia, Série Zoologia 95 (4): 421–429. https://doi.org/10.1590/S0073-47212005000400013

Nieser N (1970) Gerridae of Suriname and the Amazon with additional records of other neotropical species. Studies on the Fauna of Suriname and other Guyanas 12 (47): 94–138.

Nieser N, Melo AL (1997) Os heterópteros aquáticos de Minas Gerais. Guia introdutório com chave de identificação para as espécies de Nepomorpha e Gerromorpha. Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 180 pp.

Nieser N, Melo AL (1999) A new species of *Halobatopsis* (Heteroptera: Gerridae) from Minas Gerais (Brazil), with a key to the species. Entomologische Berichten 59: 97–102.

Nieser N, Polhemus DA (1999) Four new species of *Rhagovelia* (Heteroptera: Veliidae) from Minas Gerais (Brazil), with a key to the regional species of the *angustipes* complex. Aquatic Insects 21 (1): 53–76. https://doi.org/10.1076/aqin.21.1.53.4540

Polhemus DA (1997) Systematics of the genus *Rhagovelia* Mayr (Heteroptera: Veliidae) in the Western Hemisphere (exclusive of the *angustipes* complex). Entomological Society of America, Lanham, United States, 386 pp.

Polhemus DA (2021) Callivelia, a new genus for certain Neotropical Veliinae (Heteroptera: Veliidae), including description of a new species. Zootaxa 4950 (2): 345–360. https://doi.org/10.11646/zootaxa.4950.2.6

Polhemus JT, Polhemus DA (2008) Global diversity of true water bugs (Heteroptera; Insecta) in freshwater. Hydrobiologia 595: 379–391.

Rodrigues HDD, Moreira FFF, Nieser N, Chen PP, Melo AL, Dias-Silva K, Giehl NFS (2014) The genus *Paravelia* Breddin, 1898 (Hemiptera: Heteroptera: Veliidae) in Brazil, with descriptions of eight new species. Zootaxa 3784 (1): 1–47.

Rodrigues JMS, Nery L, Rodrigues HDD, Moreira FFF (2021) Survey of the semiaquatic bugs (Hemiptera: Heteroptera: Gerromorpha) from Alagoas and Sergipe, Northeast Brazil. Zootaxa 4958 (1): 103–159. https://doi.org/10.11646/zootaxa.4958.1.9

RS (2018) Decreto Nº 53.885, de 16 de Janeiro de 2018. Institui subdivisão das Regiões Hidrográficas do Estado do Rio Grande do Sul em Bacias Hidrográficas. Governo do Estado do Rio Grande do Sul, Brazil.

Schuh RT, Slater JA (1995) True bugs of the world (Hemiptera: Heteroptera): classification and natural history. Cornell University Press, New York, United States, 336 pp.

Spangler PJ (1990) A new species of halophilous water-strider, *Mesovelia polhemusi*, from Belize and a key and checklist of the new world species of the genus (Heteroptera: Mesoveliidae). Proceedings of the Biological Society of Washington 103 (1): 86–94.

SPGG (2021) Atlas Socioeconômico do Rio Grande do Sul/Rio Grande do Sul. 6 ed. Secretaria de Planejamento, Governança e Gestão, Departamento de Planejamento Governamental, Porto Alegre, Brazil, 203 pp.